AMENDMENTS TO THE CLAIMS

1-85 (Canceled)

86. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said signal processor is operable to calculate a threshold level of muscular activity which is in the range of 3-20% of the first level of measured activity.

87. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said sensor system is operable in said set-up mode to measure a first level of muscular activity which is associated with a maximum level of biting force.

88. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said sensor system is operable in said set-up mode to measure a second level of muscular activity which is associated with a grimace.

89. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said feedback signal generator is operable to generate said feedback signal only if said measured level of muscular activity exceeds said threshold for a predetermined period of time.

90. (Currently amended) The apparatus claim ~~85~~ 112, wherein said feedback signal generator includes a control system for controlling the duration and/or intensity of said feedback signal.

91. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said sensor system is operable to detect EMG signals.

92. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said sensor system is operable to detect acoustic signals.

93. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said apparatus is operable to store data derived from said sensor system and/or said signal processor and/or said feedback signal generator.

94. (Previously presented) The apparatus of claim 93, further including a computer and a system for transferring said stored data thereto.

95. (Currently amended) The apparatus of claim ~~85~~ 112, further comprising a user module configured to be worn on a user's head.

96. (Currently amended) The apparatus of claim ~~85~~ 112, further comprising a slave module and a master module, said slave module being configured to be worn by a human being.

97. (Currently amended) The apparatus of claim ~~85~~ 112, further comprising a display device operable to display information and/or results derived from said sensor system and/or said signal processor and/or said threshold signal generator.

98. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said signal processor is further operable to perform pattern recognition.

99. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said apparatus is operable to store said threshold level of muscular activity in an associated, non-transitory memory.

100. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said signal processor is operable to perform a Fast Fourier Transform analysis of signals from the sensor system.

101. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said apparatus is configured to perform frequency pattern recognition of signals from said sensor system.

102. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said signal processor is operable to determine the amplitude of the frequency content of signals from said sensor system.

103. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said signal processor is operable to carry out low pass filtering of signals from said sensor system so as to filter out noise and unusable signals.

104. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said signal processor is operable to average and/or rectify signals from said sensor system.

105. (Currently amended) The apparatus of claim ~~85~~ 112, wherein said apparatus is operable to accumulate data and determine and store frequency patterns corresponding to muscular activity and relating to bruxism.

106. (Currently amended) The apparatus of claim 101, wherein said apparatus is configured to perform frequency pattern recognition ~~comprises~~ by comparing the frequency content of said signals to stored frequency patterns of muscular activity relating to bruxism.

107. (Currently amended) The apparatus of claim 101, wherein said apparatus is configured to perform frequency pattern recognition ~~includes~~ by comparing one or more harmonic frequencies of said signals to ~~the~~ a stored frequency pattern of muscle activity.

108. (Previously presented) The apparatus of claim 107, wherein a first harmonic frequency and/or a second and third harmonic frequencies of said one or more harmonic frequencies are compared to the stored frequency pattern of the muscle activity relating to bruxism.

109-111 (Canceled)

112. (New) An apparatus for detecting bruxism and providing feedback to a user, said apparatus comprising:

I. a sensor system which is operable in a set-up mode and in a use mode;

A. wherein when said sensor system is in the set-up mode it is operable to:

(i) measure a first level of muscular activity of a user's jaw associated with a level of a biting force and generate a first signal corresponding thereto; and

(ii) measure a second level of muscular activity of a user's jaw associated with normally occurring, non-biting jaw activity and generate a second signal corresponding thereto;

B. and wherein when said sensor system is in the use mode, it is operable to measure the muscular activity of a sleeping user's jaw and generate a third signal corresponding thereto;

II. a signal processor which is in communication with said sensor system and is operable to receive said first and second signals generated when said sensor system is in the set-up mode and calculate and store a threshold level of muscular activity which is less than 100% of the first level of muscular activity, but more than the second level of muscular activity; and

III. a feedback signal generator which is in communication with said signal processor and with said sensor system when it is in its use mode, said feedback signal generator being operable to receive said third signal from said sensor system, generate a feedback signal, and direct said feedback signal to said sleeping user if the level of muscular activity measured by said sensor system exceeds the threshold level of muscular activity calculated by said signal processor.

113. (New) A method for detecting bruxism and providing feedback to a sleeping user, said method comprising the steps of:

measuring a first level of muscular activity of a user's jaw associated with a level of biting force, and generating a first signal corresponding thereto;

measuring a second level of muscular activity of a user's jaw associated with normally occurring jaw activity, and generating a second signal corresponding thereto;

calculating a threshold level of muscular activity of the jaw which is less than 100% of the first level of measured activity, but more than the second level of measured activity;

measuring a third level of muscular activity of a user's jaw in real time while the user is asleep, and generating a third signal corresponding thereto;

determining if the third level of muscular activity of said user's jaw exceeds said threshold level; and if it does,

providing a feedback signal to said sleeping user.

114. (New) The method of claim 113, wherein the step of calculating a threshold level of muscular activity of the jaw comprises: calculating a threshold level of muscular activity of the jaw which is in the range of 3-20% of the first level of measured activity, but more than the second level of measured activity.